

OBSERVATIONS
ON THE
FLORIDA KAYS, REEF AND GULF;
WITH
DIRECTIONS FOR SAILING ALONG THE KAYS,
From JAMAICA by the GRAND CAYMAN and the WEST END OF CUBA:
ALSO,
A DESCRIPTION, WITH SAILING INSTRUCTIONS,
OF THE
COAST OF WEST FLORIDA,
BETWEEN THE BAY OF SPIRITU SANTO AND CAPE SABLE.

BY GEORGE GAULD, *K*

To accompany his Charts of those Coasts, surveyed and published by Order of the
Right Honourable the Lords Commissioners of Admiralty.

TO WHICH HAVE BEEN ADDED,
A DESCRIPTION of the EAST COAST OF FLORIDA,
BETWEEN
CAPE FLORIDA and CAPE CANAVERAL;
AND
INSTRUCTIONS for SAILING FROM THE EASTWARD WITHIN the
FLORIDA REEF.

Entered at Stationers Hall.

LONDON:

PRINTED FOR W. FADEN, GEOGRAPHER TO HIS MAJESTY, AND TO HIS ROYAL
HIGHNESS THE PRINCE OF WALES.

1796.

FLORIDA KAYS, REEF AND GULF;
OBSERVATIONS

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FROM JAMES BY THE GRAND CAYMAN AND THE WEST END OF COBAN;
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BETWEEN

CAPE FLORIDA AND CAPE CHAPMAN,

AND

INSTRUCTIONS FOR SAILING FROM THE EASTWARD WITHIN THE
FLORIDA KEYS.

PRINTED BY
GEO. ALLEN, STATIONER, &c.
ST. JAMES'S PLACE, LONDON.

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NAVY, THE PRINTER OF NAVALS.

1796.

DIRECTIONS

FOR

SAILING FROM JAMAICA TO THE GRAND CAYMAN, AND ROUND
THE WEST END OF CUBA, TO THE TORTUGAS.

THE Latitude of PORT ROYAL in Jamaica is in $17^{\circ} 54' 17''$ North, and its Longitude from the Royal Observatory of Greenwich $77^{\circ} 3'$ West: the variation of the Magnetic Needle in the year 1772, was $6^{\circ} 30' E.$ As these observations may be depended upon, it would be adviseable for every ship-master to take his departure, and begin his reckoning immediately from Port Royal. This however is not to prevent him, if he chooses, to take a second departure from *Portland Point, Negril*, or from any other remarkable point in the Island.

SOUTH NEGRIL, which is the westernmost end, lies in $18^{\circ} 10'$ Latitude North; and from that point to the Island of Grand Cayman, the course is W. by N. $\frac{1}{2}$ N. or W. N. W. and the distance estimated between 50 and 56 leagues. In order to prevent your missing this island, which is often the case, it is best to steer about $\frac{1}{2}$ a point more northerly, till you get to the Latitude of $19^{\circ} 11'$ or $15'$; then due West, both *per compass*; this course will bring you to the southward of the Reef which encircles the whole of the east end, stretching about $1\frac{1}{2}$ mile from the shore, and which becomes the more dangerous, as a heavy swell sets always from the eastward directly on it. The east end lies in Latitude $19^{\circ} 16'$ North. If nothing is seen of the Grand Cayman, and night is approaching, you are to stand off and on, under an easy sail, till daylight; and then steering again a west course, there is no doubt but you will soon make this island.

The GRAND CAYMAN (corruptly *Camana*) is 8 leagues long, and for the most part $2\frac{1}{2}$ leagues broad. It lies about E. by N. and W. by S. bounded by a Reef, (except at the west end) whose greatest distance from the shore is about $1\frac{1}{2}$ mile, excluding that part opposite the *North Sound*, whose shallow entrance is 3 leagues from the bottom of the Bay, and excessively dangerous in the night time. The *Augustus Cæsar*, a merchant-ship, was lost there some years ago. Observations were made at the south-west point of the island the 4th of May,

1773, by Mr. Gauld, Mr. Payne his assistant, and Captain *Philips*, all agreeing to a mile, and whose mean gave for the Latitude of that point $19^{\circ} 11' 22''$ North.*

About $2\frac{1}{2}$ miles to the northward of the south-west point are the *Hogsties*, a small village, near which is the only place where large vessels can come to; the water is so clear that you can easily see where it is most proper to drop the anchor; but without the greatest precaution you are in danger of having your cables cut by the rocks. The best mark for the anchorage is to bring the southernmost house of the village to bear E. $\frac{1}{2}$ S. or E. by S. about $\frac{1}{2}$ a mile from the shore, and then you pick your birth in 7 or 12 fathoms. It is very necessary, if you stay, to steady your ship with a small anchor, as well as to buoy up your cables.

Refreshments may be had at this place, such as fowls, turtle, yams, plantains, &c. but no beef or mutton, ~~there being none~~ on the island. Water is got by filling with a bucket about 20 yards from the beach, the well bearing from the ship at anchor N. N. E. or N. by E. You can have mahogany here, but as dear as at Jamaica.

There are only 39 families of white people on the Grand Cayman, viz. 13 at the *Hogsties*, 3 at the East End, 2 at the Spots, and 21 on the South Side. These, with 200 negroes, make the whole of the inhabitants about 400.

From the west end of Grand Cayman, if you steer N. W. by W. $\frac{1}{4}$ or $\frac{1}{2}$ W. about 80 leagues distance, you will probably fall in with CAPE CORRIENTES; I say probably, for it is difficult to hit that Cape on account of the current, which generally sets to the westward impelled by the trade wind. I would advise then to steer the said course about 50 or 60 leagues, and then haul up a point higher to the northward.

Cape Corrientes which lies in Latitude $21^{\circ} 48'$ North, looks, when bearing N. W. from you, very much like Cape St. Antonio; but when you bring it to bear North, you will descry, about 4 miles to the northward of the Cape, a very high Bluff, called by the Spaniards *Cape Cayman*, under which, and about 1 mile to the northward of it, is anchorage, but very irregular soundings, with rocks and sand.

You ought to shape your course for Cape Corrientes, so as to go in sight of the ISLE OF PINES, the south side of which is reckoned to lie in $21^{\circ} 23'$ North.

From the west end of the Grand Cayman to the south side of the Isle of Pines the course is N. 47° W. distance about 52 leagues. From that side, a great

* We must remark, however, that some very good observers make that point 5 or 6 miles more northerly, which probably must be occasioned by the difference of their instruments; for the same difference also appears at Cape Corrientes, and Cape Antonio.

Bank, bounded by a Reef just above water, stretches about E. by S. 22 leagues to leeward, with many Kays upon it. These are called the JARDINES, and must be avoided with the greatest care, no place being more dangerous in the night, and in thick weather. When coming from the Grand Cayman you must especially be aware of them if you meet with light winds and a weather current, which are frequent thereabout.

From the south-west end of the Isle of Pines to Cape Corrientes, the course is W. N. W. distance about 25 leagues.

CAPE ST. ANTONIO, (Cape *St. Anthony*) which we call CAPE ANTONIO, lies to the westward of Cape Corrientes. The course to it from Cape Corrientes is about W. by S. *per compass*, 8 leagues to the *Middle Cape*, a high rugged rock, between which and Cape Antonio lies a deep Bay. There is a small Reef off this rock at the distance of 3 or 4 cables length, and soundings to the southward of it about a mile off shore.

From this the coast trends about West $3\frac{1}{2}$ leagues to the FALSE CAPE, and then it rounds gradually to the CAPE VUE, in Latitude $21^{\circ} 49'$ North, on which is a hut covered with palmetto leaves. From hence the shore lies about N. by E. $\frac{1}{2}$ E. 4 miles; then it turns to the eastward and northward. To anchor off this last Cape you must bring the hut which stands on the westernmost end of Cuba to bear East, the north point N. N. E. and the southernmost S. by E. $\frac{1}{2}$ E. or S. S. E. in 10 or 12 fathoms, large spots of clear sand and rocks, which appear very plain if the sun shines, or it is pretty clear.

There is a flux and reflux here, but the times are very irregular: the flood sets to the N. N. W. and the ebb to the S. S. E. at the rate of about $1\frac{1}{2}$ mile *per* hour, or sometimes more.

From this place the Bank, which is of a very whitish colour, with only 10 or 12 feet water on it, runs North 7 or 8 miles, when it turns round gradually to N. E. by N. and north-eastward as far as the Latitude of $22^{\circ} 6'$ or $8'$, with very uneven soundings from 6 to 3 fathoms, rocks and sand, on the edge of it; and to the eastward and southward they decrease from 6 fathoms very regularly to the shore, all fine sandy ground.

May 25th, 1773, at Cape Antonio, at $\frac{1}{2}$ past 2 P. M. the current or tide set N. W. $\frac{1}{4}$ of a mile *per* hour—26th, high water at $\frac{1}{2}$ past 2 P. M. the tide rises here about 18 inches. The flood sets to the southward, and the ebb to the northward: high water, on full and change days, about 33 minutes after 9—28th at 5 P. M. the tide set $\frac{1}{4}$ of a mile *per* Hour.

To the W. S. W. of Cape Antonio lies CAPE CATOCHE, on the north coast of Yucatan; and the sea between those 2 Capes might be named, without impropriety, THE NARROWS OF THE GULF OF MEXICO, being not above 42 leagues in breadth. Cape Catoche is low land, but LOGGERHEAD KAY, which is generally mistaken for the Cape, is a high bluff about 4 leagues to the eastward of it,
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in Latitude $21^{\circ} 38'$ North, as it was carefully ascertained by observation in 1775, by Mr. *Charles Roberts*, Master in the Royal Navy, and well acquainted with the navigation of the West-Indies.

The vessels from the Bay of Honduras generally make Loggerhead Kay, or *Cayo de Mujeres* (called by the sailors *Kay Mobair*) which lies a little to the southward of it, before they shape their course to the northward of Cuba and through the Gulf of Florida. Their first object then, as well as those who come from Jamaica round Cape Antonio, is to keep clear of the COLORADO ROCKS, the northernmost part of which lies about the Latitude of $22^{\circ} 30'$ * North. If therefore ships from the Bay steer N. E. from Loggerhead Kay, till they get into the Latitude of from 23° to 24° North, they will have nothing to fear on that account; and as the winds there are generally from the eastward, it is necessary to hold every inch they can with safety. But the masters of those vessels, who after passing Cape Antonio have steered to the westward of north; when they came upon the other tack in standing to the southward, from the uncertainty of the currents, have sometimes had the misfortune of falling in among the Colorados, which they so anxiously endeavoured to avoid.

The course from Cape Antonio, to go clear of the COLORADOS, is N. N. W. true North, 12 leagues, to allow for a current, which generally sets very strong to the N. N. E. and north-eastward as far as the Latitude of $22^{\circ} 30'$ North. As there is a bank of rocks in Latitude $22^{\circ} 21'$ which almost joins the Little SANDY KAY, mentioned by Mr. *Bishop*†, as lying west or W. $\frac{1}{2}$ S. from it; and which in my opinion is about 9 or 11 leagues from shore: after you are past the latter latitude, you may haul up as far to the eastward as N. E. by N. in the night, or N. E. in the day, until you get as far to the northward as the latitude of 23° North, when you may haul to the eastward at pleasure.

But should the wind hang to the eastward, which is generally the case, the next danger that offers will be the *Tortugas Kays and Shoals*; for which reason I would advise you not to stand any farther to the northward than the Latitude of 24° North, as the currents on the *Tortugas Bank* sometimes set to the westward, sometimes to the eastward.

The ISLAND OF CUBA being high land, and in many places very distinct, it has generally proved an inducement for our navigators to keep along that shore,

* This is a mistake, and you must read, $22^{\circ} 50'$.

† Mr. *Bishop* in the second edition of his Instructions, says, p. 42, that "as he was coming home with the fleet of merchantmen, in 1758, they kept working off the West end of the Colorados with the wind northerly; when on the 18th of July they were in so as to bring the Little Dry Kay on the Colorados to bear East northerly, distance 6 or 7 miles, and from the Reef 2 miles, being then in Latitude $22^{\circ} 34'$ North." This is probably the Sandy Kay meant by Mr. *Gauld*: but we must observe, that this gentleman is much mistaken, when he says, you may haul up as far as you please to the eastward, from the Latitude of $22^{\circ} 22'$ or $22^{\circ} 30'$. It is only in the Latitude of 23° that you enter the Gulf, and may steer an easterly course without danger, along the Cuba shore. See the Observations on the Gulf Passage by Mr. *Roberts*, p. 4, and the Chart annexed to them.

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till they get as far to the Eastward as Matanzas; and then to steer N. N. E. for the Florida Gulf. But on this course they often meet with a lee current against them, especially to the Westward of Bahia Honda, which may lengthen their passage some weeks. In crossing over also from Cuba towards the Gulf, they may sometimes fall in with the Florida Kays, which they have hitherto been unacquainted with; and if they have had the misfortune to drive over the Reef, especially in the night time, they would possibly meet with some damage on the Coral banks. As soon therefore as they perceive themselves on one side environed by the numberless uninhabited Islands, and on the other side enclosed within this Reef, which has always been reckoned so dangerous, they no doubt might despair of ever getting the vessel extricated from such a labyrinth, and therefore take to their boats. If on the other hand they should fall into the Eastward among the Bahama Islands, though they are supposed to be better known, the real danger is greater. But it is probable that when the masters of our West India ships, by the perusal of the charts which accompany these directions, have made themselves a little better acquainted with the coast of Florida, they will generally prefer it to the Cuba shore.

After coming round Cape Antonio therefore, and getting into the Latitude of 24° North, as has already been mentioned; they may safely stretch along the Florida Kays, steering in while it is day light, and off in the night time. They will then generally have a strong current to windward in their favour; and in the winter months when the winds are often northerly, they may possibly have a fair wind and smooth water all the way to the Gulf.

Description of the TORTUGAS, with Remarks on their Bank, and Sailing Directions.

THE TORTUGAS, often distinguished by the name of the *Dry Tortugas*, are generally looked upon to be very dangerous, and to a person unacquainted with them they undoubtedly are so, especially in the night time; yet when they are known, on many occasions, they may be found both useful and convenient. They consist of eleven small Islands, or *Kays**, extending E. N. E. and W. S. W. for 10 or 11 miles; most of them are covered with small bushes, and may be seen at about 4 leagues distance. I was informed by a Spaniard that there is a bank of 2 fathoms lying due south from those Kays, but I could never find it.

The Tortugas are situated about 30 leagues from the nearest part of the coast of Florida, 40 from the Island of Cuba, and 14 leagues from the westernmost of the Florida Kays. The SOUTH-WEST KAY, which though one of the smallest, is the most material to be known, lies in Latitude $24^{\circ} 32' 30''$, about the Longi-

* The Spaniards give the name of *Cayos* to those low and flat islands which are so numerous on the Coasts of Florida and Cuba, whence the English word *Kay* or *Key*, and the French word *Caye*.

tude of $84^{\circ} 15'$ West from the Royal Observatory of Greenwich; and a Reef of Coral rocks runs about $\frac{1}{4}$ of a mile S. W. from it, upon which the water is discoloured. There is a large bank of brown Coral rocks, intermixed with white patches of sand, about 5 or 6 miles to the West and S. W. of the Tortugas, upon which you have very irregular soundings, from 6 to 12 fathoms, and at that distance, on a S. W. direction is a spot of $5\frac{1}{4}$ fathoms, Coral rocks and sand. The West bank is nearly of an oblong form. The bottom appears very plainly, and though it may be alarming to strangers, there is no danger; you will find from 13 to 17 fathoms, between it and the Tortugas. The bank of soundings extends only 5 or 6 leagues to the southward of the Tortugas, but much farther to the westward, and all the way northward along the Florida shore; but the danger wherever there is any, may easily be seen from the mast-head in the day time.

When the South west Kay bore N. N. W. about 4 miles, I had from 7 to 22 fathoms, sand. Bore away W. by S. when the Kay was N. by E. $\frac{1}{4}$ E. 5 or 6 miles, had 10 and 8 fathoms. Bore away W. S. W. 3 miles, had from 7 to 22 fathoms; then steered W. $\frac{1}{2}$ S. 3 miles, the Kay to the N. E. $\frac{1}{4}$ E. 10 or 11 miles, found 18, 7, $5\frac{1}{4}$ fathoms.—Steered W. S. W. near 3 miles, had $6\frac{1}{2}$, 7, 11, 17, 23, then no ground at 30 fathoms.—Steered west 11 miles, had 24, 22, 18, 13, 10, 12, $9\frac{1}{2}$, 12, 23, 25, no ground within 30 fathoms, then 19, 10, 15, 17, 20, 21, 19, 17, $10\frac{1}{2}$, $8\frac{1}{2}$, 10, $9\frac{1}{2}$, 17, 16, 18, 20, 23 fathoms. Steering then W. S. W. 6 miles, had 23, 22, 21, 30 fathoms. Continued a W. S. W. course for 20 miles, had no ground with 30, 40, and 50 fathoms. Steered afterwards N. W.

When the South-west Kay bore N. 87° E. 19 miles, had 58 fathoms, fine sand.—When S. 88° E. 20 miles, had 35 fathoms, fine sand.—When S. 83° E. 22 miles, 37 fathoms. When S. 79° E. 24 miles, 36 fathoms, coarse sand.—When S. 75° E. 26 miles, 36 fathoms.—When S. 72° E. 29 miles, had 40 fathoms, coarse sand, and small stones.—From this last sounding, steered N. W. by N. 6 miles, had 43 fathoms, rocky; then 4 miles more had 46 fathoms, coarse sand: then N. W.—N. W. $\frac{1}{4}$ W.—N. W. by W. on the wind, the wind northerly, 16 miles, when I had 68 fathoms, fine sand; and did not sound afterwards.

From what I have found the soundings are very regular to the southward of the Tortugas Kays, till you come within 3 leagues of the shore, when they become uneven in some places. There is fine deep water to the northward of these Kays, and a channel to come round to the eastward, about 4 or 5 miles from them, very regular from 20 to 17 and 13 fathoms, when they will bear about West or W. N. W. then you may stand away to the southward clear of danger.

In passing by the Tortugas, it is necessary to sound frequently in the night, between the Latitude of 24° and 25° , and never to stand into less than 30 or 35 fathoms. The Spanish ships bound from Vera Cruz to the Havanna, make it a constant practice to endeavour to strike soundings on the *Tortuga Bank*, and keep in soundings till they are past the Tortugas; generally coming to an anchor at night, but there is no necessity for so much caution.

If

If you are bound to the eastward and meet with a strong easterly gale, which is frequent there in the summer season, you may safely come to an anchor in 5 or 6 fathoms; about $\frac{1}{4}$ of a mile off shore, under the lee of the long sandy island, to the northward of the South-west Kay. There is good anchorage also in several other places, particularly in a small but snug harbour near *Bush Kay*, which is entirely sheltered from the sea by a large Reef of rocks, and a flat shoal within them, about $\frac{1}{2}$ a mile broad; the bottom is soft clay and mud. This harbour is quite smooth, even in a gale of wind; and in case of necessity, a vessel might easily be hove down there, as there are 3 fathoms water close to the bank. There is no drinkable water to be got on any of the Tortugas, except on the northernmost island; nor is there any fire wood, except a few bushes, which it were a pity to cut down, as they serve to distinguish the Kays at a distance; but the Tortugas abound with a variety of sea birds, turtle and excellent fish. There is a broad channel to the eastward of the Tortugas, from 10 to 17 fathoms depth; but it is by no means advisable to be attempted, unless you can see the Tortugas distinctly, and keep within 2 or 3 leagues of the easternmost island; as there is a coral bank of 12 feet water at the distance of 5 leagues; and farther eastward towards Cayo Marquesé, a very dangerous and extensive bank of quicksand, on many parts of which you have no more than 4 or 5 feet water. It is of a remarkable white colour, especially all along the north edge, and may easily be seen and avoided in the day time.

The course to carry you clear of the shoals which lie between the Tortugas Kays and Cayo Marquesé is S. E. by E. 13 or 14 leagues, which I believe will be out of soundings; then you may steer east, nearly parallel to the general Reef which bounds the Florida Kays, about $3\frac{1}{2}$ or 4 leagues distant from the island.

The tide between the Tortugas and Cayo Marquesé sets variably through to the northward, and ebbs to the E. S. E. about 3 or $3\frac{1}{2}$ feet by the shore.

Description of the FLORIDA KAYS and REEF, with Directions for Sailing, Anchoring, &c.

THE westernmost part of that innumerable train of Islands, generally called THE FLORIDA KAYS, and originally the MARTYRS, consists of 8 or 9 Mangrove Islands, which go under the title of *Cayo Marquesé*; several of them are covered with pretty high trees, and may be seen at a considerable distance. To the westward and north-westward of them lies the large bank of quicksand already mentioned; and due south from the western extremity of this bank, the West end of the GENERAL FLORIDA REEF, is situated in Latitude $24^{\circ} 22'$; which is nearly the most southerly part of this extensive Reef, that runs parallel to the Kays, and forms a kind of general Bar to the coast.

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There is a channel between the Reef and the above mentioned bank, and likewise all along between it and the Kays, in many places upwards of 4 miles broad. The Reef at the west end is about 3 miles in breadth; but the least water on it is 5 fathoms, with irregular soundings to 7 and 8 fathoms. It is all discoloured water, generally brown, with patches of white sand and coral rocks, and the bottom plainly appears. The Reef in general is very steep on the south side, there being from 20 to 30 fathoms, muddy bottom, within about a mile or two of it: and as the outside of the Reef is no where above 6 or 7 miles distant from the range of Islands, you may safely in the day time, approach near enough to make the land distinctly.

The water in the channel, within the Reef, is all of a white colour; the bottom is in general fine sand, mud or clay; and there is pretty good anchorage all along, only taking care not to come into less than 5 fathoms.

CAYO MARQUESE, or *the Marquis's Kay*, commonly called *Kay Marquet*, is in $24^{\circ} 28'$ Latitude north, the variation about 7° East.

To the westward of Cayo Marquese, there is from 7 to 10 fathoms in the channel, and $3\frac{1}{2}$ is the least water on the Reef; abreast of Cayo Marquese, $7\frac{1}{2}$ fathoms, soft mud, is the deepest in the channel, and $3\frac{1}{2}$ the least water on the Reef.

Just to the eastward of Cayo Marquese, there is a large opening, called by the Spaniards BOCA GRANDE, which is upwards of 2 leagues in breadth, and has a channel through to the northward of 9 or 10 feet, but it is not to be recommended to strangers.

From Kay Marquese to Cayo Hueso, the course is about East without the Reef, distance 9 or 10 Leagues.

CAYO HUESO (*Bone Kay*) is the first island of any consequence to the eastward of Cayo Marquese; its South-west point lies in $24^{\circ} 29'$ Latitude North. There are a parcel of scattered *Mangrove Islands* between Boca Grande and it, the 3 southernmost of which have white sandy beaches. CAYO HUESO (or KAY WEST, as it is corruptly called by the English) is 7 miles in length, and has a sandy beach on the south side. The trees are very thick upon it, especially at the west end, round which there is a *convenient Harbour*, sufficient for sloops of war, with a channel of 4 fathoms into it.

This harbour is much frequented by the Turtles and Wreckers from *Providence*, and likewise by the fishing craft from the Havanna, who find it convenient on account of a channel through the bank to the northward, in their way to the Coast of Florida; but there is some difficulty arising from the channel or entrance across the Reef: your guide must be a small *Sandy Kay*, lying S. S. W. 8 or 9 miles, from the West end of Cayo Hueso just on the edge of the Reef, about 8 or 10 feet perpendicular height, and in $24^{\circ} 22'$ Latitude north: the channel lies 4 or 5 miles to the
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the eastward of it, and about S. by E. of the West end of the Kay. If you are without the Reef, you will see the *Sandy Kay* just mentioned which is the westernmost on the Reef. Near this Kay there are dry shoals and breakers for upwards of 3 miles to the westward, where the soundings are very irregular from 6 to 2 fathoms, and like dangers are found near 5 miles to the eastward. But there is a fine broad channel over the Reef, of $4\frac{1}{2}$ to 5 fathoms water, by bringing the West end of Cayo Hueso to bear about N. N. W. or N. by W. $\frac{1}{2}$ W. and steering in that direction. You will easily know when you are over the Reef in 6 or 7 fathoms, both by the whitish colour of the water, and by the soft muddy bottom; when you may keep more to the westward, in order to avoid some coral patches of $2\frac{1}{2}$ and 3 fathoms; give the South-west point a birth of $\frac{3}{4}$ of a mile, as a rocky spit runs out from it.—When you get *Cayo Canalete*, (which is a green Mangrove Island), just open with the North-west point, you may steer in with that mark, and keeping within a cable's length of the point, (where there is an old turtle crawl and a single bushy tree) you will carry 4 fathoms into the harbour, and may come to an anchor any where between that and Cayo Canalete above mentioned, in $3\frac{1}{2}$, or $3\frac{3}{4}$ fathoms, about halfway between the island and Cayo Canalete. The best anchoring ground is nearest the east bank, as there is some small coral near the middle and west parts of the harbour.

In going in you will observe a black spot, which is a small Reef to the north of you; this you must avoid, and shoot it to the eastward, guided by your eye.

Ships larger than sloops of war must bring the South-west point of the island about N. by W. or N. N. W. in $5\frac{1}{2}$, or $6\frac{1}{2}$ fathoms, fine specky clay and shells.

The Harbour of Kay West lies almost opposite to the Havanna, at the distance of about 26 leagues, and may be found very useful in case of contrary winds, or to get refreshments. It is a small harbour, but which affords very safe anchorage, being sheltered all round, except a little to the south-westward, from which quarter the wind hardly blows. But in the season of the northern and western gales, it is best to lay outside.

There is fresh water to be got at the west end of the island by digging, but it is not very good, being at times a little brackish. This is an excellent place for fire wood. There are turtle with variety of fine fish, and the island likewise abounds with deer of which you find plenty on most of the islands to the eastward, but none to the eastward of it.

The tides here are in some measure regular within the Reef, the flood setting to the westward, and the ebb to the eastward. It is high water on full and change days, nearly about 7 o'clock in the morning. To the westward between Cayo Marquefe and the Tortugas, it sets invariably through to the northward, and ebbs to the E. S. E. about 3 or $3\frac{1}{2}$ feet by the shore.

The channel within the Reef between Boca Grande and Cayo Hueso is in general about 3 miles broad, and the deepest water 6 and 7 fathoms, fine sand and clay: there are 2 or 3 patches of coral rocks with $2\frac{1}{2}$ and 3 fathoms water, nearly in mid channel, lying about S. S. E. from the West end of Cayo Hueso.

At the East end of Cayo Hueso, there is a small opening called Boca Chica, which leads to an infinite number of small Mangrove Islands, but nothing except a canoe can pass quite through over the shoals.

About 7 miles S. E. from the East end of Cayo Hueso, or S. S. E. from Boca Chica, there are Three Small sandy Kays on the Reef; they are called CAYOS SAMBOES, being directly opposite to the Island of *Cayo Samba*, and Cayo Sombrero is about 13 leagues to the westward of them.

Between the Westernmost of these 3 Kays and the middle one, you find a channel of 4 fathoms over the Reef, and another of 3 fathoms between the Middle and Easternmost Kay; but for 10 miles to the eastward of the same Kays, the Reef is broad and dangerous, there being in some places dry rocks; and in general it is full of sunken rocks 4 or 6 feet under water, with crooked channels of 4, 6 and 7 fathoms between them.

Seven miles to the eastward of Boca Chica there is a *Small Island* with a remarkable high bluff of trees, which in most views appear *in the shape of a saddle*. It has an opening at each end into a large shallow bay, bordered with innumerable Mangrove Islands to the northward. The general course of the chain of islands turns gradually to the northward of East from Cayo Hueso.

At the distance of 7 leagues from the West end of Cayo Hueso you find several large islands covered with pine trees, and which continue all the way to Bahia Honda, for the space of 4 leagues farther to the eastward. Some of these PINE ISLANDS are pretty large, but it is difficult to approach them on account of the small depth of water. They have several openings quite through to the northward, but so shallow as to be only passable in boats and canoes. The timber found on these islands is smaller than what grows on the main land. They are generally bordered with a Mangrove swamp just within the beach, and of about 100 yards in breadth; then the ground rises higher, and is all of a rocky bottom. I must observe here that the Mangrove Islands, which are very numerous, and often form large clusters, are in general washed over at high water, wherein if a Mangrove bush takes root, it forms a little island in the course of a few years; and one of these islands breeds in time a cluster of others round its own shores.

LOOE KAY (so called from His Majesty's ship *the Looe* having been cast away there) is a small sandy Island on the Reef, 9 leagues from the West end of Cayo Hueso, 18 from Cayo Marquesa, and 35 leagues to the eastward of the Tortugas. The rocks run but a little way off this Kay, and there is no kind of danger but what may be avoided in the day time. The Reef is very steep on the south side; for you have 20 fathoms within a mile of the Kay, and 100 fathoms about 2 leagues

leagues to the southward of it. There is a channel of 4 and 5 fathoms over the Reef about a mile to the westward of the Kay; but to the eastward of it for 2 or 3 miles you cannot depend on carrying more than 15 or 16 feet; though farther on to the eastward, for the distance of 4 or 5 leagues, you will have $3\frac{1}{2}$, and in many places 4 and 5 fathoms the least water on the Reef.

We erected in 1774, a large pole on Looe Kay, and one on the westernmost sandy Kay; which, if they remain, may be seen at a considerable distance.

About 4 miles due North from Looe Kay there is a small Harbour, called by the Providence people NEW FOUND HARBOUR, and by the Spaniards *Cayo Vamos*; but it is fit for nothing but small craft, as only 7 or 8 feet at most can be carried into it.

BAHIA HONDA lies about 10 miles N. E. from Looe Kay in Latitude $24^{\circ} 35'$. It has a large entrance and a fair channel of 4 and 5 fathoms; but when you are in the harbour it shoals to $3\frac{1}{2}$, 3, $2\frac{1}{2}$, and $2\frac{1}{2}$ fathoms, and the bottom in general is rather hard rough ground.

THE HARBOUR OF BAHIA HONDA may be easily known by the tall palmetto cabbage-trees of the Long Island on the right hand coming in; they make it the more remarkable, as there are no cabbage-trees to the westward of it, on any of the Kays that are on the Reef.—*Looe Kay* lies on the Reef about 3 leagues S. W. from Bahia Honda, to the westward of which you have 4 and 5 fathoms over the Reef, at the distance of about $\frac{1}{2}$ of a mile; and to the eastward for upwards of 2 miles, you will in some places find hardly 3 fathoms; but about due North from the entrance of Bahia Honda, you will carry at least 4 fathoms over the Reef. Afterwards there is a fair channel of 4 and 5 fathoms, till you get within the rocky point, and you may anchor in $3\frac{1}{2}$ between the North-west point and the Three Islands. If you propose staying here any time, it will be necessary to buoy up your cables, as it is rather foul ground.

Bahia Honda, like Cayo Huefo, is much frequented by the Turtles and Wreckers from *Providence*, and by the Spanish vessels from Havanna, of which there are about 10 annually employed in fishing among the Kays on the coast of Florida, where there is a sufficient quantity of fish to supply the West Indies. There is a convenient channel for small vessels, from both those places, quite through the Kays, to the northward.

In regard to the tides, it is remarkable that on the south side of the Kays, the flood comes from the south-eastward; but on the north side of them, all the way from the channel of Cayo Huefo, the flood runs to the eastward, along the edge of the bank, and to the southward, through the little channels, in order to fill up the intermediate bays and lagoons, with the assistance of the flood from the southward. The reason of this extraordinary effect seems to be, that between Cayo Huefo, and Bahia Honda, there is in general such shallow water among
the

the range of Kays, as not to admit the flood from the southward to have its proper force to carry the waters over the bank. Therefore when it gets through the channel of Cayo Huefo and that of Boca Grande, to the westernmost of it; the water naturally pushes to the eastward to fill up the empty spaces: but whatever the cause may be, the effect is certain.

I have already observed, that between the Florida Reef and the Kays to the West of Cayo Huefo, even as far as the Dry Tortugas, the flood seems to set pretty regularly to the north-westward and northward over the Bank, and *vice versa*. But to the westward of Cayo Huefo there is a general current to the south-westward along the Reef, and a good deal to the southward of it.

From Bahia Honda to the West end of CAYO DE VACCAS, *Cows Island* (the next considerable island in proceeding to the eastward) the distance is 4 leagues, and the direction of the coast trenches still more to the northward. There are only a few small Kays between them, the body or thick cluster of islands ending about Bahia Honda, which makes this almost vacant space the more remarkable.

About 5 miles South from the west end of Cayo de Vaccas, or *Kay Vaccas*, there is a small sandy Kay on the Reef, called by the Spaniards CAYO SOMBRERO. There are in all 6 Kays on the Reef, and as they may serve as so many good land marks to know exactly where you are, in case of falling in with any of them; it will not be improper in this place to recapitulate the situation of each of them.

The westernmost lies 3 leagues S. S. W. from Cayo Huefo, in Latitude $24^{\circ} 23'$, and Longitude $82^{\circ} 40'$ West—the Three small Kays off Boca Chica, in Latitude $24^{\circ} 24'$, and the Middle one in Longitude $82^{\circ} 25'$ —Looe Kay in $24^{\circ} 30'$ Latitude; and $82^{\circ} 11'$ West Longitude—and Cayo Sombrero in Latitude $24^{\circ} 34' 30''$, and Longitude $81^{\circ} 55'$ West.

As we have thus given a general account of the Reef and the Chain of Islands, as far as Cayo de Vaccas, we shall now return to the Channel between them. It was observed before, that there were two or three small coral patches with $2\frac{1}{2}$ or 3 fathoms water; they lie about $2\frac{1}{2}$ or 3 miles S. S. E. from the west end of Cayo Huefo, and have 5 and 6 fathoms all round them, being near the middle of the channel, which is there about 5 miles broad: it continues to be upwards of 4 miles in breadth till you are past the Three Kays on the Reef off Boca Chica; when the Reef grows broader and the channel narrower, with 4 or 5 fathoms, the deepest water. In the narrowest part, which is about 5 or 6 miles to the westward of Looe Kay, the channel is only $1\frac{1}{2}$ mile broad, and $3\frac{1}{2}$ fathoms the deepest water; but as you approach Looe Kay it grows broader again, and deepens to 5, 6, and 7 fathoms, mud and clay. Abreast of Bahia Honda the channel is about 3 miles broad with the same soundings, and continues about the same breadth as far as Cayo de Vaccas.

Two general remarks must be made concerning this Channel to the westward of Cayo de Vaccas; first, that you will have 3 fathoms all the way within a mile of the Kays, and will always find the deepest water nearest the Reef. Secondly, the usual method of navigation in the channel between the Reef and the Kays, is always to come to an anchor in the night, where it is clear ground; but where there is any coral, it is necessary sometimes to buoy up the cables to prevent their being rubbed on it.

Cayo de Vaccas, or rather the thick range of Islands which go by that name, extends about N. E. by E. for the space of 5 leagues, the easternmost of which being called DUCK KAY. These Islands are covered with trees of various sorts, such as mangrove, button-wood, palmetto trees, &c.

From Duck Kay to CAYO DE LAS BIVORAS, (*Rattle-Snakes Kay*) or, as we call it, KAY BIVORAS, the distance is about 6 miles, and there are three small mangrove Islands between them. Kay Bivoras is 5 miles long, with a white sandy beach, and is remarkable for a high hummock of trees at the west end.

From the East end of Bivoras Kay to the west end of OLD MATA CUMBÉ the distance is $3\frac{1}{2}$ miles: Matacumbé is 4 miles long in a N. E. direction. The trees at the North end are very high and level at the top, appearing at a distance like table land. There is a safe harbour near the North end of Matacumbé, where vessels not drawing above 7 or 8 feet, may go in and anchor in 3 fathoms secure from all winds; but you must go round the east side of a small Island called *Indian Kay* or *Matança*; keeping about a cable's length off shore; and you will have 9 and 10 feet for some distance, till you get into 2 and 3 fathoms in a broad Channel which runs round towards the North end of Matacumbé, where there is a large turtle crawl. The Channel plainly shews itself by the white shallow banks on each side, where there are only 2 or 3 feet water. INDIAN KAY lies about a mile to the eastward of Old Matacumbé, and it is all a shoal between them. To the north-east and northward of Matacumbé the mangrove Islands begin again, and continue to the main land about 6 or 7 leagues distant; and all the way to the eastward within CAYO LARGO, &c. But that large space is almost one continued flat, with some small channels of 5 or 6 feet water.

The Reef from Cayo Sombrero is in general very broken ground as far as the West end of Matacumbé; there being many patches of coral rocks, with 6 and 8 feet water; and others where the rocks rise to the surface, particularly some spots off the East end of Kay Vacas, about 7 or 8 miles off shore. There are likewise some large patches of 8 or 9 feet off the middle of Kay Bivoras, and another large rocky shoal of 8 and 10 feet off the West end of Matacumbé, at the distance of about 5 miles; but you find channels of at least 3 fathoms water over several parts of the Reef between them.

Some dangerous shoals of coral rocks are lying also in the Channel between the Reef and the South-west part of Cayo de Vacas, the largest of which has only
4 feet

4 feet water on it, and lies 4 miles N. E. from Cayo Sombrero, and about 2 miles off Kay Vacas. There are several other small patches of 5 and 6 feet to the N. E. of it; but in the day time all these shoals appear very plainly at a distance, being of a brown colour; and as it is unsafe to run in the night, you must always come to an anchor through the whole extent of the channel, as soon as it grows dark.

From Cayo de Vacas' shoals, the Channel still continues to be 2 or 3 miles broad to the eastward of Matacumbé, 4 fathoms being the deepest water; but $2\frac{1}{2}$ and 3 fathoms are the general depth along Kay Bivoras at 2 or 3 miles distance.

NEW MATACUMBÉ lies upwards of 2 miles to the north-eastward of Old Matacumbé, and is 4 miles long in a N. E. direction. It is covered with thick tall trees. At the east end of it there is an opening about $\frac{1}{2}$ a mile wide, with a small mangrove island in the middle; then a mangrove Island near 2 miles long, which is separated by a narrow channel from a large Island near 7 miles in length, covered with high trees of various kinds, among which there is some mahogany and Madeira-wood of a very fine grain. This, which we have taken the liberty of calling LONG ISLAND, and CAYO LARGO, appears at a distance like one continued track of land, though there is a narrow channel between them.

KAY TAVERNIER (or CAYO TABANO, as it is called by the Spaniards) is a small Island about 2 miles from the South-west end of Cayo Largo, and 5 leagues N. E. from Old Matacumbé. There is very good anchorage a little to the northward of it for such vessels as frequent the coast.

CAYO RODRIGUÉS, or *Melchior Rodrigués*, called by the Wreckers *Fox Island*, is a pretty large mangrove Island, without any firm ground, the roots of the trees being constantly overflowed; it lies, like Kay Tavernier, off Cayo Largo, at the distance of 5 miles N. E. by N. $\frac{1}{4}$ N. from Tavernier, in Latitude 25° North, and Longitude $81^{\circ} 17'$ West. From hence the coast of Cayo Largo, which here appears like main land, turns quickly N. N. E. and N. by E. to North; for which reason Cape Florida might be reckoned somewhere hereabouts; though there is no particular point of land known by that name to the people of Providence, who seem to be best acquainted with those parts.

There are no shoals on the Reef opposite to Old Matacumbé, except that off the South-west end, above mentioned; but there is a large patch of coral rocks bearing E. S. E. 6 or 7 miles from the North end of Old Matacumbé, on which there is only 4 or 5 feet water. The Reef comes within less than 3 miles of Rodrigués, where you have only 7 and 8 feet; and 3 fathoms is generally the deepest water in the Channel all along.

From this large shoal off Rodrigués, which forms a kind of elbow, the patches of coral rocks increase in number and dimensions, forming several Reefs, with small channels of deep water through them.

Rodrigués

Rodrigués * Kay lies opposite to the *Great Inlet* of the Florida Reef, and near the Coast of Cayo Largo, which from the Kay extends above 6 leagues to the N. E. by N. At the North end of that coast, and in the same direction nearly, begins another range of Islands and small Kays, that terminate at Cape Florida. The most remarkable among them are the small Kay called *THE PAPS*, from the Three hillocks upon it; and *KAY BISCAYNO*, the last of the Florida Kays, near the Cape of that name; it lies about 2 leagues West of the *Forwey Rocks*, which are the first dry spot on the Reef, and where it ends. From Kay Biscayno to Cape Canaveral the coast runs up to the northward; this is the East shore of Florida; of which a description will be given hereafter.

After passing the Latitude of $25^{\circ} 30'$, having a good offing, you may steer N. $\frac{1}{2}$ E. *per compass*, always making the weather-shore before night, which you generally will find to be on the Bahama side, except in the winter months. Keep under an easy sail, and frequently heave the lead. You will then often find the vessel gliding smoothly along in the direction of the Florida stream, till you come to the parallel of 28° or possibly $28^{\circ} 30'$, when you may haul to the eastward, and the longer you can keep in the course of that stream, the better.

It is necessary to observe that the variation, which at the Tortugas, in 1774 and 1775, was about 7° East, decreases, as you go eastward, to 6° ; and to the northward it also continues decreasing to 5° about Cape Canaveral.

Of the WATERING PLACES on the FLORIDA KAYS.

WE have hitherto purposely omitted mentioning where fresh water may be found among those Kays, to avoid confusion, and to bring into one point of view so necessary an article for those who may have the misfortune to be shipwrecked, or otherwise be in want of it.

There is no good water on the Tortugas, nor any where till you come to the West end of CAYO HUESO, where there are several wells dug in the sand. The water there is pretty good, especially after rain, but sometimes you will find it a little brackish; in which case the best way is to dig a new well, which is soon done, and you will find the water much better than what has been standing in the old wells. The best place to dig at, and where you meet with the sweetest water, is about a mile eastward of the point.

At BAHIA HONDA very good fresh water is to be obtained in the same manner: and on the South side of CAYO DE VACCAS, about 8 miles from the west end, there

* Mr. Gauld's Survey going no farther than Cayo Rodrigués, the remaining Kays, as far as Cape Florida, are described by M. Gerard de Brahm, Surveyor general of the Southern district of North America, and land-surveyor of East Florida; who in that capacity resided at St. Augustine from 1765 till 1771.

are likewise fresh water wells; they are found on the East part of a narrow opening, with a sandy beach on each side of it.

These are the only places among the Kays of the first division (at least as far as we know) where fresh water is to be got by wells; but there are several fresh water swamps, and natural reservoirs among the rocks; particularly a large one on the North side of KAY VACCAS, about 6 miles from the west end, where the water never fails. It lies in a valley about 100 yards from the beach, a little to the westward of three Mangrove Islands. Fresh water is found sometimes among the rocks at the West end of Kay Vaccas, and the small Islands to the westward of it, as well as at the West end of DUCK KAY, and at several other places.

It is necessary here to observe, that just within the sandy beach, the Islands are generally bordered with a Mangrove Swamp of about 100 yards broad; beyond which the ground rises higher and is generally of a rocky bottom, where you will often find fresh water ponds or natural tanks, which receive and retain the rain water. The small Mangrove Islands, which are numerous, have very little solid ground; but whenever a Mangrove bush takes root in the salt water, it soon forms an island, as I have already observed, and many clusters of small islands have evidently been formed in this manner upon the Coral banks.

But the principal watering place is at the North end of OLD MATA CUMBÉ, where Five natural wells are found in the rock about 4 feet deep, and constantly full of excellent water. *Matança* or *Indian Kay*, already mentioned, is the leading mark to find the watering place on Matacumbé, it lies W. S. W. 2 miles from another small Kay called *Boys Kay*. When you come for water, no matter from what quarter, you are to run boldly up, to within pistol shot of the North-east part of Boys Kay, and you will come at the entrance of a channel which leads up to the wells; this channel, as was said before, is only 9 or 10 feet deep; it is very narrow, and has a strong current. On account of the watering place and of the plenty of fish and turtle, Matacumbé is much frequented by the Wreckers and Turtlers.

Between Kay Tabano and Kay Rodrigués, and within them (3 miles to the N. W. of the former) lies a very small Kay called *Cayo de Palumbas*, or DOVE KAY: it is gravelly and of a moderate height; in the wet season, it affords good fresh water. Doves are found also on this Kay, and purslain grows on it.

At the South end of KAY BISCAYNO near Cape Florida, very good water is to be got by digging; provided the land does not cover clay; for wherever clay appears on the beach, the labour would be fruitless. But sometimes in the dry season wells will yield no water, then the watering places on the main, 8 or 10 miles from the Kay, may always be depended upon.

From these observations, it will appear, that there is no great difficulty in finding fresh water on most of the Florida Kays; and there is fire-wood in plenty upon all of them, except the Tortugas. In the number of vegetables, the cabbage tree,

tree, which abounds on some of these Kays, affords a wholesome food for man: abundance of birds of many kinds, variety of the finest fish and some turtle, are to be found all along the coast. From Cayo Hueso eastward, there are deer of the small kinds. But besides all these, among the roots of the Mangroves and about every old log or piece of rotten wood, there are such quantities of the largest cray-fish, that a boat may be loaded with them in a few hours.

In future, therefore, if any of our homeward bound ships should unfortunately be run aground upon one of the Florida Kays, or in such a situation that the boats can reach the shore; as the people run no risque of being starved, it is to be hoped they will never suppose themselves to be under the necessity of abandoning their ships. For the little vessels from PROVIDENCE are constantly plying about those small islands, especially after a storm; they make lawful prize of all such as have been thus deserted; but they give every kind of assistance to those who faithfully attending to the interest of the owners, remain with their ships till they are relieved; and if we consider the activity with which the *Wreckers* always exert themselves, we must look upon them as a set of very useful men.

Should a vessel be drove upon the Florida Reef, the safest method is, to do your utmost to get over it; and come to anchor in the Channel between the Reef and the Kays, which you will find not a bad Roadstead. If it is in the night, the soundings must direct you; but in the day-time, the kind of bottom may be seen, and the danger if there is any, avoided. When the storm is over, by consulting the Charts and the appearances of land, you will easily find out on what part of the coast you have fallen; and upon comparing the preceding Directions with the Charts, you may with great safety in fair weather bring the ship along the Channel to some convenient place, from whence you cross the Reef, to proceed on your voyage.

DESCRIPTION OF THE EAST SHORE OF FLORIDA,

by *M. Gerard de Brahm.*

CAPE FLORIDA, where that shore is supposed to begin, lies in $25^{\circ} 41' 30''$ Latitude North, and $81^{\circ} 13' 13''$ Longitude West from Greenwich, it is the south point of Narrow Island, 8 or 9 miles long, and separated from the main by an opening to the northward, called WHITE INLET; this will admit small craft, but has a Reef stretching a great way to the sea.

About 18 miles North of White Inlet lies the mouth of MIDDLE RIVER, $\frac{1}{4}$ of a mile broad, but shallow. The shore in this space is full of sandy hillocks, covered with shrubs and trees, and is so flat that there is not above 12 feet water within a mile of it, the bottom solid rock.

Ten miles further you come to NEW INLET, about as broad as middle river, and remarkable for five cabbage-trees which stand 4 or 5 miles to the South of it. Here the shore is no longer so bold as before, but a bank of soundings about 5 leagues broad begins to cover the beach.

DRY INLET, or *Rio Seco*, as the Spaniards name it, lies 6 miles from New Inlet, its mouth is seldom open, and has a narrow bar of dry sand before it. The shore forms here a little cove, which makes a good road for small craft.

Above 13 leagues northward of this Inlet you come to GRENVILLE INLET, in $26^{\circ} 47'$ Latitude North, which will only admit vessels of 5 feet draught. It is known by a high mount of sand and rocks called *Coopers* or *Groopers Hill*. And by the ROCKY SPRING, a high ledge of rocks, out of which a large stream of fresh water rushes into the sea. This spring is to the southward of the mount, and 6 miles from the inlet, in $26^{\circ} 41'$ Latitude North. The land hereabout produces abundance of cabbage-trees, cocoa-plants, and sea-grapes, as well as venison and other meat.

From New Inlet to Coopers Hill the Gulf stream comes very near the beach; and the colour of the water which was of a lively Saxon blue changes to a muddy green. The shore which has continued from Cape Florida a little to the eastward of north, trenches now to the westward of it, and you come to HILLSBOROUGH INLET in $27^{\circ} 14'$ Latitude North. About 12 miles to the northward of Grenville Inlet are several high black rocks standing on the beach, which, with a hill in land to N. W. of the rocks, makes this part of the shore remarkable; the hill is sometimes called the *Bald Mount*, but oftner the *Bleach-Yard*, on account of its numerous white spots.

A small Reef just under water, about $\frac{1}{2}$ a mile from the shore, abreast of the high rocks, forms here a convenient little harbour for boats. There are Two wells of excellent water in a little meadow back of the sand hills, near a mile to the South of those same rocks; the wells have casks in them, and this is a very good watering place for vessels, which having had a tedious passage through the Gulf are in want of this indispensable article. The island between the 2 inlets affords plenty of turtle and deer, besides cocoa-plumbs and palm-cabbages; and on the main opposite, turkies are found in abundance. The coast is even bold to, and the soundings regular.

Hillsborough Inlet has a very shifting bar, sometimes not admitting a boat; and at other times 6, 8, or even 10 feet water have been found upon it. Therefore if you have business here, a boat must be sent to explore the bar before you run in; when within it is a safe harbour; but a vessel must be moored, the tide, which ebbs and flows 5 feet, running with great force. The Spaniards come to this place for the purpose of fishing, and the quantity of fish and oysters they find there is amazing.

Off Hillsborough Inlet the sand has the peculiar and pernicious quality of rubbing cables to pieces in the bent, insomuch that one can never lay 24 hours at an anchor without wholly or nearly losing it, even in fine weather, nay, you will often in less time find one or two strands quite chaffed off: what this is owing to is not known, the sand being a very fine quick sand, except close in where there are some stones.

About 8 leagues N. by W. $\frac{1}{2}$ W. from Hillsborough inlet are the small hills called by Spaniards the *TORTOLAS*, and by us the *HUMMOCKS*, off which there are some heads of rocks under water. From hence the shore bending insensibly toward the North, terminates at Cape Canaveral. From 6 mile North of the inlet to the shoal of Canaveral, it is flat and treacherous, and the whole as far as the inlet, is covered with an immense number of palm-trees.

CAPE CANAVERAL lies in $28^{\circ} 16'$ Latitude North, and $81^{\circ} 28'$ Longitude West of Greenwich; the outermost breakers of the shoal which surrounds it, are at 15 miles distance from the Cape, and land is scarce visible when you are on them. Observe that the wind, on a long and violent gale blowing from E. N. E. to S. E. makes Canaveral shoal almost unavoidable to a ship sailing in this Latitude, and not having a very large offing.

From Coopers Hill, or the Rocky Spring, South of Grenville Inlet, where the bank of soundings begins to increase in breadth, the edge of that bank as well as that of the Gulf stream runs for 8 or 9 leagues to the N. by E. then to the West of North for about 18 leagues, and at a distance from 5 to 8 leagues from the shore; when taking a northerly direction for 5 or 6 leagues, it sweeps round Cape Canaveral 2 or 3 leagues from the outermost breakers.

Of the WINDS and CURRENTS.

IT is well known, that in the Torrid Zone, and for several degrees to the northward and southward thereof, the winds are generally from the east all the year round.

Towards the northern limit of THE TRADE WINDS, as they are generally called, which on the American side of the Atlantic Ocean is from Latitude 30° to 31° or more; these winds are often to the northward of East; and in the winter months when the sun has a considerable south declination, they are sometimes still more to the northward. In the summer season the Trade winds are to the southward of East; but generally to the northward of these limits, on the coast of North America, the winds are often westerly.

These are the general rules; but it must be observed that there are many exceptions, which nothing but experience and accurate observations can ever account for.

The

The course of the waters in the Great Oceans, corresponding to the motions of the moon, is from East to West; and to this may be added, that the great currents of the atmosphere, within and near the Torrid Zone, generally hold the same course, as has already been mentioned. From these, and possibly other causes combined, the waters of the Atlantic are forced as it were against the coasts of America, and the Islands of the West Indies, with great rapidity. The greatest velocity of this body of water being towards the Equator, where it falls upon the continent of America; it is then turned in a North westerly course along that coast, till it gets into the Gulf of Mexico, and is there accumulated to its greatest height. From its nature as a fluid, which may be considered as incompressible, it must therefore overflow where it meets with the least resistance; and between the Island of Cuba and the main land, it forms that remarkable *Current* called THE STREAM OF THE GULF OF FLORIDA. When it gets past that elbow, which is commonly termed Cape Florida, it is opposed by the Islands and banks of Bahama; and meeting with the least resistance to the northward, it proceeds along the coast of America, in a North and North easterly direction; turning more and more to the eastward, till it gets near to the Nantucket shoals; or as some affirm, almost to the banks of Newfoundland; when it takes its course to the South eastward, and loses itself by degrees in the Atlantic, somewhere about the Western Islands.

The Gulf of Mexico may in fact be considered as one great whirlpool*. For the waters rushing in with great velocity between Cape Antonio and Cape Catoche; and being confined on all sides by the land, except the passage between the Island of Cuba and the Florida shore, as has already been mentioned, this great body of water is therefore forced into a kind of circular motion; which appears the more evident, as all the Islands, promontories and points of land on the coast of the Gulf of Mexico, have deep water on the one side, and on the opposite a shallow spit or bank of sand runs out to a considerable distance.

A South-east gale always drives an extraordinary body of water into the Gulf of Mexico, and a North or N. E. wind retards both its ingress and egress. After such gales therefore, the currents and counter-currents in and near to the Gulf of Florida, must run with the greatest velocity; and when the breezes are regular and gentle, these currents run with less force or violence. During a S. E. gale or storm, the waters in the bays and rivers on the coast of West Florida have been known to rise 7 feet perpendicular; vessels of considerable burthen have been drove in amongst the pine-trees at some distance from the shore, and other damages done, &c.

As there is not room sufficient between the Island of Cuba and Florida, for all that body of water which is often accumulated in the great Gulf of Mexico, so speedily

* See Letter from Dr. Lorimer, 21st of April, 1769. Transactions of the American Phil. Society held at Philadelphia, Vol. I. p. 250.

speedily to discharge itself; it is in several places forced round in a kind of Eddy or Counter-current, as may generally be met with among the Colorados, and upon all that part of the coast of Cuba to the westward of Bahia Honda. Upon the Florida Reef and in the Channel between that Reef and the Islands, there is also a Counter-current from the eastward.

On the Tortuga Banks, and among the Florida Kays, THE TIDES are pretty regular, running from 4 to 6 and sometimes 8 hours. The flood, apparently coming from this counter-current, runs into all the channels between the islands at the rate of $1\frac{1}{2}$ or 2 miles an hour; and to the northward of the islands it turns again to East and South eastward, filling up all the shallow bays and lagoons on that side, as is shown by the arrows on the Chart.

On the days of the full and change of the moon, it is high water at the Tortugas and among the Florida Kays, between 8 and 9 in the morning. The tide rises only about 3 feet, or 4 feet at spring tides on all that coast.

It is unnecessary however for us to enter more minutely into the courses of these currents and counter-currents; experience and judicious observations must direct the skilful mariner. But it may be proper just to observe, that whenever any point of land projects beyond the general line of the coast, or where the shores approach nearer to each other, the central current is confined, and a counter-current on one or both sides is produced in-shore.

The counter-current on the coast of East Florida may be of use to small vessels in passing from St. Augustin to the Havanna or into the Gulf of Mexico; which on that account keep very near the shore, or within the Florida Reef. The same advantages may no doubt be taken of the counter-currents on the Bahama and Cuba side of the Gulf, by those who are well acquainted with them. But in the navigation from Jamaica, the great general current, is always in their favor, if they only take the proper means of availing themselves of it.

They should therefore, whenever the wind permits, keep in the direct course of the Gulf-Stream, of which some general account, has already been given; we shall add only that on the edge of that stream, especially in fair weather, there are great rippings; and Dr. *Franklin* mentions, that its water does not sparkle in the night; in the day-time the appearance of the sea-weed, known by the name of *Gulf-weed*, is a sign that you are within the stream.

Instructions for the West Shore of Florida between the BAY OF SPIRITU SANTO and CAPE SABLE.

THE BAY OF ESPIRITU SANTO, vulgarly *Spiritu Santo*, extends above 10 leagues inland to the N. E. and is terminated by Two harbours, in the westernmost
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of which, called TAMPA BAY, you find only 6 feet water; and in the other, which is named HILLSBOROUGH BAY, from 15 to 10 feet.

The Bay of Spiritu Santo has its opening sheltered by three narrow Kays or Islands, which, with several islets stretching off the South point, are forming three entrances. The Southernmost of these, in Latitude $27^{\circ} 36'$ North, lies between the North head of LONG ISLAND, called *Grant's Point*, and the small Island BURNABY, $1\frac{1}{2}$ mile to the north of it: when you come through this entrance you bring *Grant's Point* to bear N. E. $\frac{1}{2}$ E. and run in on that course till the South end of Burnaby bears N. E. $\frac{1}{2}$ N. then you will be on the bar, which has 16 feet water; as it is of small width, you must continue the same course till nearly abreast of Burnaby island, where you will have 3, 4 and 5 fathoms; then steer East, and run in as high as you please, according to the Chart.

The Second Entrance, which is between Burnaby and EGMONT ISLANDS, is $1\frac{1}{2}$ mile broad. To enter between these two islands, keep in 5 fathoms, until you bring the North end of Burnaby to bear E. by N. $\frac{1}{2}$ E. nearly, and proceed on that course till the South end of Egmont is bearing N. E. by E. $\frac{1}{2}$ E. you will soon be in 17 feet water: then steer about E. N. E. directly for the midway between the two islands, where you will continue for $\frac{1}{2}$ of a mile in 16 or 17 feet, the shoalest water being under the north bank. When you are over this, you will have $3\frac{1}{2}$ or 4 fathoms, and by keeping a little to the northward of the last course after you have cleared the islands, you may run up the bay without fear.

The Third and Northernmost Entrance, which is the principal one, is called by the Spaniards BOCA GRANDE; it is about 3 miles broad, and lies between Egmont Island, and the small islands, to the north-eastward of it, called MULLET KAYS. There is a great shoal running West from Egmont Island about 4 or 5 miles, and another shoal North of it, which form the channel. This channel is about 1 mile broad till it comes to the northernmost point of Egmont Island, and then it is contracted to about $\frac{1}{2}$ a mile. The least water in it is 4 fathoms; it deepens pretty regularly, and in the narrowest part you have 17 fathoms; the North point of Egmont Island is steep to, there are 7 fathoms water within 60 yards of it, and 3 fathoms up and down.

EGMONT ISLAND lies North and South, is about 2 miles long, and better than $\frac{1}{2}$ of a mile broad. The North end is highest, being about 6 or 7 feet above high water mark: a bank much of the same height, and about 40 feet broad, runs on the west side next the sea, almost the length of the whole island, within which there is a valley covered with bushes of different sorts, and various plants that afford an agreeable verdure, though the soil is hardly any thing but sand and shells. There are a few fresh water swamps, but the water is not good.

When you are going through this great entrance you run into $4\frac{1}{2}$ or 5 fathoms, bringing the South part of the Mullet Kays to bear E. $\frac{1}{2}$ S. then steer on in the same direction till the North end of Egmont is bearing E. by S. $\frac{1}{2}$ S. you will find

find $3\frac{1}{2}$ or 4 fathoms, and proceed on that course till you deepen your water to 6 fathoms; then run East, inclining rather to the south shore. As soon as you have doubled Egmont Island, you may anchor under it, or run up if you choose it, by the Mullet Kays.

Spiritu Santo Bay will admit large vessels, and there they will find abundance of fish, oysters, and clams, as well as large and small water-fowls, turkeys, deer, &c. with plenty of fresh water and wood. The Spaniards resort to the Mullet Kays for the purpose of fishing, and have built huts on the principal of them, where there are likewise wells of fresh water. The chief growth on these Kays, and on the large ones at the entrance of the Bay, are mangroves, and blackwood bushes.

We must observe that the land about the Bay is low, and visible only at 8 or 9 miles distance, where you will have from $7\frac{1}{2}$ to 7 fathoms water.

CARLOS BAY.

About 20 leagues S. 34° E. from the Bay of Spiritu Santo lies CARLOS BAY, or CHARLOTTE BAY of the English, which like the former is distinguished by three entrances; the Middle one, called BOCA GRANDE, has a depth of water, of 13 or 15 feet; on the Northernmost or BOCA GASPARIILLA, you find about 9; and BOCA CAUTIVA, or the South entrance, has only 7 feet water.

The safest way to this Bay for vessels coming from the southward, that is from the Tortugas Bank, is to run N. $\frac{1}{2}$ E. about 40 leagues, and they cannot miss this Bay, where they will find refreshments in case of necessity. It affords excellent water in many places, especially on the island to the south of Boca Grande. There is likewise plenty of fish, and the islands are stocked with large herds of deer.

The middle entrance of Boca Grande in Latitude $26^{\circ} 38'$ north, is known by a broken bluff with a grove of pine-trees standing very near the beach on the North end of the South island, and the only one of its form and kind in all these parts; it becomes very remarkable as soon as you have well shot it: you bring those pine-trees to E. S. E. and run in for them till you are in 15 feet water, which is the bar. Then changing the course to E. N. E. you will presently deepen your water to 4, 5, 6, and even 10 fathoms, with plenty of working room between the banks, keeping the North Breaker on board, and having run in close to the North shore, which is the South end of GASPARIILLA ISLAND, then you may pick your anchoring ground; but the inside of the Bay is shallow, and the farther you proceed the less water you will find*.

Boca

* The islands which form that entrance are called by the Spaniards *Cayos del Boca Grande*. Mr. Gauld, who went a shore to the Spanish fishing stages, found there 9 people, and 3 or 4 snug palmetto huts
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Boca Cautiva, as we have said already, has only 7 feet water on the bar. Beyond this entrance are three small islands running to the E. S. E. through which are the passages into CARLOS HARBOUR, which have still less water than Boca Cautiva. This place is remarkable for a great number of pine-trees without tops, standing at the bottom of the Harbour or Bay.

From Carlos Harbour the coast bordered all along with pine-trees, trenches to the S. E. by S. about 19 leagues as far as PUNTA LARGA, sometimes called by the English *Cape Roman*.

From this Cape northward and westward, the tide seems to ebb and flow once in 24 hours; but as it is much governed by the winds, the periods are very irregular; for with a South, S. W. or West wind the flow will be much longer than the fall; whereas with a North, N. E. or East wind it will ebb longer than it will rise. Consequently it happens frequently that at the time of springs you find less water on a bar than at neap tides, and *vice versa*. The tide has not been observed to rise above 2 feet any where, at the highest times; yet its effects on the currents of rivers are in a dry summer very perceptible, at a great distance from the sea.

BAY OF JUAN PONCE DE LEON.

THIS Bay, to which our sailors have given the name of CHATHAM BAY, lies between Punta Larga, and CAPE SABLE, or *Punta Tanca*, (as the Spaniards call it) the Southernmost head-land of Florida; and about 20 leagues distant from the former. It is a shallow Bay of little importance, and its navigation fit only for turtlers and fishermen.

From Cape Sable eastward to Cayo Largo there are a number of little Islands; but the water all round them is so shallow that a boat can hardly approach them. It is not yet certain, whether *Cayo Largo* is an Island, or a peninsula joined to the main land by an isthmus: it may possibly be a peninsula at low tides; and if at other times it becomes an Island; it cannot be of any consequence, for the rise of the tide is so small, that nothing but a canoe can pass through such a channel.

We must not however terminate this article without observing, that through the whole of Chatham Bay, it runs tide and half tide in the same manner as at Plymouth, the Needles, and the Isle of Wight in England; that is to say, 3 hours flood, then 3 hours ebb; next 9 hours flood, and lastly 9 hours ebb. It does

huts, and plenty of carp and other fish on hooks, a dressing on the stage. They begin by pressing the fish with a great weight after it is split and salted, then hang it up to dry in the manner above mentioned: the last operation is, is to pile it up in the huts ready for loading. They supply the Havanna, and the other Spanish settlements in the West Indies, in the Lent season, in the same manner as New Foundland supplies those in the Mediterranean. It is a very lucrative branch of trade.

does not rise to an equal height in all places, nor does it run equally rapid in every part: in some places you shall meet it a mere fall; and in almost every gut, among the many Islands in this Bay, you will find it as much as 4 stout men can do to stem the current with a boat.

General Directions for Sailing from Cape Canaveral to Kay Biscaino, and from thence, within the Florida Reef, into the Gulf of Mexico. By CAPTAIN BARTON of Carolina. Communicated to Mr. Gauld, October 24th, 1774.

BEING in Latitude of $28^{\circ} 35'$ or $30'$, which is $15'$ or $20'$ to the north of Cape Canaveral, you must not borrow nearer than 10 fathoms water; and that will carry you without the shoal off that Cape, which lies 3 leagues from the land.

To INDIAN RIVER (*Hillsborough Inlet*) it is 22 leagues S. by W.* From Cape Canaveral to this river the STREAM runs from 4 to 5 leagues from the shore, and the soundings are irregular.

To Point AGUA (Rocky Spring) S. by E. $\frac{1}{2}$ E. distance 12 leagues. For about 6 leagues the STREAM runs within 2 leagues of the shore; the remainder part from 3 to 4 miles.

To KAY BISCAINO, South distance 22 leagues, and in $25^{\circ} 55'$ Latitude†. The Stream runs about 3 miles from the shore when you get the length of this Kay. You must take your soundings in 4 fathoms water to avoid a shoal, which runs two leagues S. E. by E. from the South end of Kay Biscaino.

To KAY LARGO South distance 4 leagues; take your soundings from $3\frac{1}{2}$ to 4 fathoms water, till you bring the North end of Kay Largo, which is rugged broken land, to bear West of you $\frac{1}{2}$ a league; then you begin to enter the Reef, and will have about 2 fathoms water. Between Kay Biscaino and Kay Largo are two very small Kays, called *Soldier Kays*.

To LONG SHOAL S. by W. and S. S. W. distance 4 leagues.

To KAY MELCHIOR RODRIGO (*Rodrigués*) S. W. by S. distance 4 leagues.

To KAY TAVERNIER S. W. $\frac{1}{2}$ S. distance 3 leagues.

The 2 last Kays lie without Kay Largo, which you leave on your starboard hand.

* This is the bearing from the outermost shoal of the Cape. From the pitch of the Cape to this place, the course is S. by E. about 21 leagues.

† The true Latitude is $25^{\circ} 40'$.

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To KAY MATACUMBA S. W. distance 6 leagues. Off Matacumba lies a small Kay, called *Frenchman's Kay*; and on the North end of the Main Kay is good water.

To KAY BIVORAS S. W. $\frac{1}{2}$ W. distance 2 leagues.

To the North end of KAY VACAS S. W. by W. $2\frac{1}{2}$ leagues—To the South end of the said Kay S. W. by W. distance 4 leagues.

Off the West end of Kay Vacas lies a sand Kay on the Reef, about South from it, called by some *Kay Looe**. At this West end there is a channel of 8 feet water to go into the Bay of Apalache: your course through it is North about 4 miles; then N. N. W. about 3 leagues, which will bring you in sight of the main land. Then you steer N. W. by W. to Cape *St. Blas*; 6 fathoms will carry you clear of any danger until you draw near the bottom of Apalache Bay.

From Kay Vacas to the KAY OF BAY HONDA S. W. by W. westerly. This is a very remarkable Kay, (*Cabbage-tree Island*) having a great many cabbage-trees, and being the only one which has them in plenty. To the westward of this Kay, for about 4 leagues, are several large Kays called PINARA, (*the Pine Islands*) producing many pines, and being the only Kays that have any.

To CAGAVAMA KAY (southward of the Pinara) W. by S. $\frac{1}{4}$ S. distance 3 leagues. To the South of this Kay about 1 league, lies a sand Kay (*Kay Looe*) upon the Reef.

To KAY THREE HUMMOCKS (*Saddle Bluff*) W. by S. $\frac{1}{4}$ S. $3\frac{1}{2}$ leagues.

To the West end of KAY SAMBA, or *Kay Boca Chica*, W. by S. 2 leagues.

To the West end of KAY WEST W. by S. southerly 2 leagues. From that end S. S. W. above 2 leagues, lies a sandy Kay on the Reef, (*Westernmost Kay on the Reef*) but you seldom see it unless you are a great distance from the Kays.

To KAY BOCA GRANDE (*Saragold Kay*) W. S. W. and W. by S. $\frac{1}{4}$ W. distance 4 leagues.

To KAY MARQUESE, the westernmost of the Florida Kays, W. $\frac{1}{4}$ S. 3 leagues.—Between the two last Kays lies *Boca Grande*, a channel of 15 feet water, and a mile broad.

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N. B. After you enter the Reef, to the eastward, you must not exceed 10 feet water until you make the Kays of Melchior Rodrigués and Tavernier; then you may go in $2\frac{1}{2}$ fathoms, till you are up with Matacumba Bay; and from thence in $3\frac{1}{2}$ fathoms through the whole length of the Kays.

* This is a mistake, Kay Looe lies a great deal more to the West, the Kay mentioned here is *Cayo Sombrero*.

F I N I S.

